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EXAMINER	
STULTZ, JESSICA T	
ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 08/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/666,058	GILES ET AL.	
	Examiner	Art Unit	
	Jessica T Stultz	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-34* is/are rejected.

7)☒ Claim(s) *13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0903*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Drawings

New corrected drawings are required in this application because Figures 9 and 11 fall outside the accepted boundaries of drawings. See MPEP 37 CFR 1.52. Additionally, the labels for Figures 1-12 and their corresponding reference numbers are written in by hand and are therefore informal and unclear. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Objections

Claim 34 is objected to because of the following informalities: "profile and/or switching function" should be changed to "profile or switching function, or both". Specifically, the phrase "and/or" is vague and the above corrections clarify the limitations of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12, 14-27, and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon et al in view of Allen et al.

Regarding claim 1, Moon et al discloses an optical device for discretionary treatment of channels of an optical beam, the optical device comprising: a port for at least transmitting or receiving a first beam having a plurality of channels (Sections 101 and 104-106, wherein the optical device is filter "10" and the input port "18" receives beam "17" which has multiple channels "28", Figures 1-3); a wavelength discriminating device optically coupled to the port (Sections 104-106, wherein the wavelength discriminating element is diffraction grating "30" which is coupled to port "18" by optical fiber "22" and tube "24", Figures 1-3), the wavelength device adapted for at least one of receiving the first beam and diffracting the beam into a plurality of channel beams or receiving a plurality of channel beams and combining the channel beams into the first beam (Sections 104-106, wherein the grating "30" receives the first beams "28" , diffracts the beams to form beams "32", receives the channel beams "53", and combines the channel beams together towards output port "20" to form output beam "38", Figure 1); an array of reflective elements (Sections 104-108, wherein the reflective elements are micro-mirrors "52" of micro-mirror device "50", Figures 1-3), at least a portion of the reflective elements being optically coupled to the wavelength discriminating device and reflecting the channel beams (Sections 104-108, wherein the reflective elements "52" reflect input beams "32" and are coupled to device "30" by lens "34" and plate "35", Figures 1-3), at least two reflective selected elements are controllable to effect a desired output of the channel beam (Sections 104-108, wherein at least two sections of the mirrors "52" are rotated to direct the channel beams to the output port "20", Figures 1-3), but does not specifically disclose that the reflective elements exceed the number of channels or that at least two reflective elements of the selected portion correspond to a particular channel beam. Allen et al discloses an optical device having one or

more ports wherein the reflective elements exceed the number of channels (Column 4, lines 3-62, wherein there are more reflective elements "172" and "176" than channels, i.e. beamlets "152", Figures 2 and 3a-c) and at least two or more reflective elements of a portion of reflective elements correspond to a particular channel beam (Column 4, lines 3-62, wherein the beam "152" is incident on a reflector cluster "168", including reflectors "172" and "176", specifically in Figures 3b-c) for the purpose of matching the beamlets with a two-dimensional grid of reflectors and to provide diffraction of the beams (Column 4, lines 3-62). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for optical device of Moon et al to further include the number of reflective elements exceeding the number of channels and at least two of reflective elements of the selected portion corresponding to a particular channel beam since Allen et al discloses a method of using an optical device having one or more ports wherein the reflective elements exceed the number of channels and at least two or more reflective elements of a portion of reflective elements correspond to a particular channel beam for the purpose of matching the beamlets with a two-dimensional grid of reflectors and to provide diffraction of the beams.

Regarding claim 2, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that at least two reflective elements are controllable to coupling particular channel beams to one or more ports (Sections 104-108, wherein two sections of the mirrors "52" are rotated to direct the channel beams to the output port "20", Figures 1-3) or to create a group delay profile in the particular channel beam (Sections 104-108, wherein selected sections of the mirrors "52" are rotated to achieve the desired delay

profile of output signal "38" and to direct the channel beams to the output port "20", Figures 1-3 and 7).

Regarding claims 3-5, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the optical device has x, y, and z axes with the z axis being along the optical axis of the port, and wherein the reflective elements are controllable in one of three directions: a first direction wherein the element is rotated about the y axis, a second direction wherein the reflective element is rotated about an axis parallel to the x axis, and a third direction in which the reflective element is moved along the z axis (Section 108, wherein the mirrors "52" are rotated along axis "51", perpendicular to the spectral axis "55" and wherein the micro-mirrors may flip about any axis, Figures 1-4).

Regarding claim 6, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses secondary ports aligned with the y-axis (Sections 104-108 and 160, wherein the ports are "19", "20" or "240", Figures 1-3 and 30), wherein a certain movement of two or more adjacent reflective elements about an axis parallel to the x-axis causes a channel beam to couple with a port along the y-axis (Sections 104-108, wherein two sections of the mirrors "52" are rotated to direct the channel beams "53" to the output port "20" and Sections 160, wherein the beams "56" are directed to another port "240", Figures 1-3 and 30).

Regarding claim 7, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that certain movement of two or more adjacent mirrors about an axis parallel to the x-axis causes a channel beam to switch from one port to a different port along the y axis (Sections 104-108, wherein two sections of the mirrors "52" are

rotated to direct the channel beams “53” to the output port “20” and Sections 160, wherein the beams “56” are directed to another port “240”, Figures 1-3 and 30)

Regarding claim 8, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that a certain movement of two or more adjacent mirrors about the y-axis produces a group delay profile in the channel beam (Sections 104-108, wherein the mirrors “52” are rotated along axis “51”, perpendicular to the spectral axis “55” and wherein the micro-mirrors may flip about any axis and wherein selected sections of the mirrors “52” are rotated to achieve the desired delay profile of output signal “38” and to direct the channel beams to the output port “20”, Figures 1-3 and 7).

Regarding claims 9-10, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that array is a linear two dimensional array (Section 108, wherein the array “50” has micro-mirror devices “52” arranged in a linear 2-D array, Figures 1-4).

Regarding claim 11, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that each reflective element has a width of less than 50 micrometers (Section 108, wherein the reflective elements “52” are 10-20 micrometers in width, Figures 1-4).

Regarding claim 12, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that array of mirrors has a linear fill density of no less than about 95 % (Section 108 and shown in Figure 3, wherein the mirrors “52” fill the array linearly, with only 1 micrometer spacing between each mirror and therefore have no less than about 95% fill density).

Regarding claim 14, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the reflective elements are configured in a first way wherein at least a portion of the reflective elements receive a channel beam from the wavelength discriminating device (Sections 104-108, wherein the reflective elements “52” receive beams “32” from the wavelength discriminating device “30”, Figures 1-3), a second way wherein at least a portion of the reflective elements reflect the channel beams to the wavelength discriminated device for combining into the first beam (Sections 104-108, wherein at least a portion of the elements “52” reflect the channel beams “32” to form beams “53”, which combine to form a first beam to exit at outputs “19” and “20”, Figures 1-3), and a third way in which a different portion of the reflective elements reflect a portion of the channel beam to the wavelength discriminating device for combining into a second beam having fewer channel than the first beam (104-108, wherein the channels are selectively attenuated by the mirrors “52” to form a desired gain profile of the output signal “38”, Figures 1-3).

Regarding claims 15 and 20, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the reflective elements are configured in the first and third way (Sections 104-108, wherein the channels are selectively attenuated by the tilting some of the mirrors “52” to form a desired gain profile of the output signal “38”, wherein the reflected beams “53” combine to from the signal “38” and the reflected beams “56” are directed out of the return path, Figures 1-3).

Regarding claim 16, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the reflective elements are configured in

the first way only (Sections 104-108, wherein the micro-mirrors are all tilted and the beams "56" are all reflected outside of the return path, Figures 1-3).

Regarding claim 17, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the wavelength discriminating device is not in the optical path between the reflective elements and the secondary ports (Section 160, wherein the wavelength discriminating device "30" is not in the path betweent the mirrors "52" of SLM "36" and the secondary port "240" wherein the output signal "38" exits, Figure 30).

Regarding claim 18, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the wavelength discriminating device is in the optical path between the reflective elements and the secondary ports (Sections 104-108, wherein the device "30" is between the mirrors "52" and the output ports "19" and "20", Figures 1-3).

Regarding claim 19, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the reflective elements are configured in the second way only (Sections 104-108, wherein the none of the micro-mirrors are tilted and all of the beams "32" reflect back into the return path, Figures 1-3).

Regarding claim 21, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the port is a fiber (Section 104-106, wherein the first port "18" receives the input signal from fiber "17", Figure 1).

Regarding claim 22, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses secondary ports wherein the ports reflect a secondary beam having an equal or few number of channels than the beam (Sections 104-108,

wherein the output ports "19" and "20" receive output signal "38" which either has the same number of channels as input signal "28" or has a desired gain profile wherein channels "56" are extracted from the input beam, Figures 1-3).

Regarding claim 23, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that at lest one secondary beam is a single channel beam and at least one secondary beam is multi-channel beam (Sections 104-108, wherein the output ports "19" and "20" receive output signal "38" which either has the same number of channels as input signal "28" or has a desired gain profile wherein channels "56" are extracted from the input beam, Figures 1-3).

Regarding claims 24-25, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the port is an input port and the secondary ports are output ports (Sections 104-108, wherein the input port is "18" and the secondary ports are "19" and "20", Figure 1) or that the port is an output port and the secondary ports are import ports (Sections 104-108, wherein the output port is "20" and the secondary ports "18" and "19" are import ports since they receive input from fiber "17" and circulator "16", Figure 1).

Regarding claim 26, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the port is an input and output port such that is transmits the beam and receives a secondary beam (Section 104-106, wherein the port "109" is both an input and output port, Figure 1).

Regarding claim 27, Moon et al and Allen et al disclose and teach of an optical device as disclosed above and Moon et al further discloses that the wavelength discriminating device

comprises a diffraction grating (Section 104-106, wherein the wavelength discriminating element is diffraction grating "30", Figures 1-3).

Regarding claim 31, Moon et al discloses a method of switching channels in an optical device having x, y, and z axes and comprising two or more ports along the y-axis (Sections 101 and 104-106, wherein the optical device is filter "10" and the ports are "18", "19" and "20", Figures 1-3), a wavelength discriminating device coupled to one or more of the ports (Sections 104-106, wherein the wavelength discriminating element is diffraction grating "30" which is coupled to ports "18", "19" and "20" by optical fiber "22", tube "24", Figures 1-3), and an array of reflective elements (Sections 104-108, wherein the reflective elements are mirrors "52" of micro-mirror device "50", Figures 1-3), at least a portion of the reflective elements being optically coupled to the wavelength discriminating device to reflect the channel beams (Sections 104-108, wherein the reflective elements "52" are coupled to device "30" by lens "34" and plate "35", Figures 1-3), the method comprising: rotating at least two reflective elements of the portion about an axis parallel to the x-axis to switch the optical coupling of the particular channel beam from one port to another port along the y-axis (Sections 104-108, wherein two sections of the mirrors "52" are rotated to direct the channel beams "53" to the output port "20", Figures 1-3 and Sections 160, wherein the beam s "56" are directed to another port "240", Figures 1-3 and 30), but does not specifically discloses at least two of reflective elements of the portion correspond to a particular channel beam. Allen et al discloses a method of using an optical device having one or more ports wherein at least two or more reflective elements of a portion of reflective elements correspond to a particular channel beam (Column 4, lines 3-62, wherein the beam "152" is incident on a reflector cluster "168", including reflectors "172" and "176", specifically in

Figures 3b-c) for the purpose of matching the beamlets with a two-dimensional grid of reflectors and to provide diffraction of the beams (Column 4, lines 3-62). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the method of switching channels of Moon et al further include at least two of reflective elements of the portion corresponding to a particular channel beam since Allen et al discloses a method of using an optical device having one or more ports wherein at least two or more reflective elements of a portion of reflective elements correspond to a particular channel beam for the purpose of matching the beamlets with a two-dimensional grid of reflectors and to provide diffraction of the beams.

Regarding claim 32, Moon et al discloses a method of switching channels in an optical device having x, y, and z axes and comprising at least one port (Sections 101 and 104-106, wherein the optical device is filter "10" and the ports are "18", "19" and "20", Figures 1-3), a wavelength discriminating device coupled to the port (Sections 104-106, wherein the wavelength discriminating element is diffraction grating "30" which is coupled to ports "18", "19" and "20" by optical fiber "22", tube "24", Figures 1-3), and an array of reflective elements (Sections 104-108, wherein the reflective elements are mirrors "52" of micro-mirror device "50", Figures 1-3), at least a portion of the reflective elements being optically coupled to the wavelength discriminating device to reflect the channel beams (Sections 104-108, wherein the reflective elements "52" are coupled to device "30" by lens "34" and plate "35", Figures 1-3), the method comprising: rotating selected reflective elements of the portion about an the y-axis to produce a desired group delay profile (Sections 104-108, wherein selected sections of the mirrors "52" are rotated to achieve the desired delay profile of output signal "38", Figures 1-3 and 7), but does not

specifically discloses at least two of reflective elements of the portion correspond to a particular channel beam. Allen et al discloses a method of using an optical device having one or more ports wherein at least two or more reflective elements of a portion of reflective elements correspond to a particular channel beam (Column 4, lines 3-62, wherein the beam "152" is incident on a reflector cluster "168", including reflectors "172" and "176", specifically in Figures 3b-c) for the purpose of matching the beamlets with a two-dimensional grid of reflectors and to provide diffraction of the beams (Column 4, lines 3-62). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the method of switching channels of Moon et al further include at least two of reflective elements of the portion corresponding to a particular channel beam since Allen et al discloses a method of using an optical device having one or more ports wherein at least two or more reflective elements of a portion of reflective elements correspond to a particular channel beam for the purpose of matching the beamlets with a two-dimensional grid of reflectors and to provide diffraction of the beams.

Regarding claim 33, Moon et al and Allen et al disclose and teach of a method of switching channels as shown above and Moon et al further discloses rotating selected reflective element of the portion about an axis parallel to the x axis to achieve a desired transmission profile (Sections 104-108, wherein selected sections of the mirrors "52" are rotated to achieve the desired transmission profile or output signal "38", Figures 1-3 and 7).

Regarding claim 34, Moon et al and Allen et al disclose and teach of a method of switching channels as shown above and Moon et al further discloses two or more ports aligned along the y axis (Sections 101 and 104-106, wherein the optical device is filter "10" and the ports

are "18", "19" and "20", Figures 1-3), and rotating selected reflective elements about an axis parallel to the x axis to achieve a desired transmission profile or switching function, or both, between the ports (Sections 104-108, wherein selected sections of the mirrors "52" are rotated to achieve the desired transmission profile of output signal "38" and to direct the channel beams "53" to the output port "20" and Sections 160, wherein the beam s "56" are directed to another port "240", Figures 1-3, 7, and 30).

Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al in view of Moon et al.

Regarding claim 28, Allen et al discloses a method of assembling an optical device having one or more ports (Column 4, lines 3-35, wherein the optical device is the diffraction grating "160" having various input ports which radiate beams "128", Figures 2-3), an array of reflective elements (Column 4, lines 3-62, wherein the array of reflective array "169" is an array of reflector clusters "168", which include reflectors "172" and "176", Figures 1 and 3a-c), wherein the number of reflective elements significantly exceeds the number of channels handled by the optical device (Column 4, lines 3-62, wherein there are more reflective elements "172" and "176" than channels, i.e. beamlets "152", Figures 2 and 3a-c), the method comprising: disposing the array of reflective elements in the optical device such that a portion of the reflective elements is in the optical path of a channel beam (Column 4, lines 3-62, wherein the array of reflective clusters "168" is in the optical path of channel beams "152", Figures 2 and 3a-c), and adjusting the portion of the reflective elements to optically couple the channel beam with a desired port (Column 4, lines 3-62, wherein the reflective elements "176" are adjustable to diffract the radiation beamlets "152", Figures 3a-c), but does not specifically disclose a

wavelength discriminating device optically coupled to one or more of the ports. Moon et al teaches of assembling an optical device having one or more ports (Sections 101-104, wherein the optical device is optical filter “10” having input port “18”, Figure 1-3), an array of adjustable reflective elements (Sections 104-108, wherein the adjustable reflective elements are mirrors “52” of micro-mirror device “50”, Figures 1-3) and a wavelength discriminating element optically coupled to the port (Sections 104-106, wherein the wavelength discriminating element is diffraction grating “30” which is coupled to port “18” by optical fiber “22”, tube “24” and collimator “26”, Figures 2 and 3a-c) for the purpose of separating and spreading the optical channels of the collimated input beam by diffracting or dispersing the light from the grating (Section 104). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the method of assembling an optical device of Allen et al to further include a wavelength discriminating device optically coupled to one or more of the ports since Moon et al teaches of assembling an optical device having one or more ports, an array of adjustable reflective elements and a wavelength discriminating element optically coupled to the port for the purpose of separating and spreading the optical channels of the collimated input beam by diffracting or dispersing the light from the grating.

Regarding claim 29, Allen et al and Moon et al discloses and teach of an optical device as shown above and Allen et al further disclose that the reflective elements are disposed in the optical device using passive alignment (Column 4, line 3-62, wherein the array “169” of reflective elements are in passive alignment when the reflectors “172” and “176” are in the non-diffracting positions, Figures 2, 3a-3b).

Regarding claim 30, Allen et al discloses a method of configuring an optical device for discretionary treatment of channels of an optical beam, the optical device having one or more ports (Column 4, lines 3-35, wherein the optical device is the diffraction grating “160” having various input ports which radiate channel beams “128”, Figures 2-3), an array of reflective elements (Column 4, lines 3-62, wherein the array of reflective array “169” is an array of reflector clusters “168”, which include reflectors “172” and “176”, Figures 1 and 3a-c), wherein the number of reflective elements significantly exceeds the number of channels handled by the optical device (Column 4, lines 3-62, wherein there are more reflective elements “172” and “176” than channels, i.e. beamlets “152”, Figures 2 and 3a-c), the method comprising: operating the optical device such that channel beam are incident on particular reflective elements (Column 4, lines 3-62, wherein the beamlets “152” are incident on specific reflector clusters “168”, Figures 2 and 3a-c), wherein at least one channel beam is incident on two or more reflective elements (Column 4, lines 3-62, wherein the beam “152” is incident on a reflector cluster “168”, including reflectors “172” and “176”, specifically in Figures 3b-c); and manipulating the particular reflective member to optical couple the at least one channel beam to one or more ports (Column 4, lines 3-62, wherein the reflective elements “176” are adjustable to diffract the radiation beamlets “152”, Figures 3a-c), but does not specifically disclose a wavelength discriminating device optically coupled to one or more of the ports and the array of reflective elements. Moon et al teaches of assembling an optical device having one or more ports (Sections 101-104, wherein the optical device is optical filter “10” having input port “18”, Figure 1-3), an array of adjustable reflective elements (Sections 104-108, wherein the adjustable reflective elements are mirrors “52” of micro-mirror device “50”, Figures 1-3) and a wavelength

discriminating element optically coupled to the port and the array of reflective elements (Sections 104-106, wherein the wavelength discriminating element is diffraction grating "30" which is coupled to port "18" by optical fiber "22", tube "24" and collimator "26" and to micro-mirror device "50"by lens "34" and plate "35", Figures 1-3) for the purpose of separating and spreading the optical channels of the collimated input beam by diffracting or dispersing the light from the grating (Section 104). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the method of assembling an optical device of Allen et al to further include a wavelength discriminating device optically coupled to one or more of the ports and the array of reflective elements since Moon et al teaches of assembling an optical device having an one or more ports, an array of adjustable reflective elements and a wavelength discriminating element optically coupled to the port and the array of reflective elements for the purpose of separating and spreading the optical channels of the collimated input beam by diffracting or dispersing the light from the grating.

Allowable Subject Matter

Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowable subject matter: none of the prior art alone or in combination disclose or teach of the claimed combination of limitations to warrant a rejection under 35 USC 102 or 103.

Specifically regarding claim 13, none of the prior art alone or in combination disclose or teach of an optical device as disclosed above, specifically wherein the spacing between adjacent reflective elements is determined by the claimed equation.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Li et al, Okayama, and Peeters et al are cited as having some similar structure to the claimed invention since they disclose optical switches to change the direction of optical channels by reflective elements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jessica Stultz

Patent Examiner
AU 2873
July 30, 2004

Georgia Epps
Supervisory Patent Examiner
Technology Center 2800